

## **REMARKS**

This is a full and timely response to the non-final Office Action mailed October 4, 2005. Reconsideration and allowance of the application and presently pending claims are respectfully requested.

### **Present Status of Patent Application**

Upon entry of the amendments in this response, claims 1-2, 4-28 remain pending in the present application. More specifically, claims 9-11 and 13-18 have been withdrawn from consideration; claims 20-28 have been newly submitted with no new material being added; and claim 3 has been canceled. Applicants have canceled this claim merely to reduce the number of disputed issues and to facilitate early allowance and issuance of other claims in the present application. Applicants reserve the right to pursue the subject matter of this claim in a continuing application, if Applicants so choose, and do not intend to dedicate the canceled subject matter to the public. Reconsideration and allowance of the application and presently pending claims are respectfully requested.

#### **A. Claim Rejections under 35 U.S.C. §102(e)**

##### **Statement of the Rejection**

Claims 1-3, 12 and 19 are rejected under 35 U.S.C. §102(e) as being anticipated by Sakamoto (US 2003/0020126 A1).

##### **Response to the Rejection**

A proper rejection under 35 U.S.C. §102(e) requires that a single prior art reference disclose each element of the claim. Furthermore, anticipation requires that each and every element of the claimed invention be disclosed in a single prior art reference.

Applicants respectfully assert that claims 1, 2, 12 and 19 are now in condition for allowance. Further remarks elaborating on Applicant's assertion have been provided below for each of the rejected claims.

##### **Claim 1**

The Office Action asserts that Sakamoto anticipates Applicant's Claim 1. However, in doing so, the Office Action improperly asserts that Sakamoto's "through **plating**" of a through hole (TH) anticipates Applicants' step of "**filling** a through hole." Applicants respectfully disagree with such an assertion because a person of ordinary skill in the art would not equate a *plating applied to the inner surface* of a through hole as equivalent to *filling* a through hole.

The Office Action further draws a conclusion that “each of the conductive die mounting pad (14) and the conductive connecting pad (16) in FIG. 11C of Sakamoto can be regarded as a pad that has no hole(s) therein.” Applicants respectfully disagree with this Office Action conclusion for reasons described below.

Attention is drawn to Sakamoto’s paragraphs [0015] to [0017], reproduced below for easy reference:

[0015] In a manufacturing method of the CSP 12, **firstly** copper foils (hereafter referred to as Cu foils) 20 and 21 are attached on both sides of a base material (supporting substrate) of the glass epoxy substrate 11 with an insulative adhesive, **as shown in FIG. 11A.**

[0016] **Next, as shown in FIG. 11B, patterning is made** to the Cu foils 20 and 21, after areas to form the first electrode (die pad) 14, the second electrode 15 and the first and second backside electrodes 16, 17 are covered with etching-resistant films 22. The patterning could be done on the topside and the backside separately.

[0017] **Then, as shown in FIG. 11C, holes for the through holes TH are formed** in the glass epoxy substrate using a drill or a laser, and **the holes are plated** to form the through holes TH. The die pad 14 and the first backside electrode 16 as well as the second electrode 15 and the second backside electrode 17 are electrically connected respectively by the through holes TH.  
(Emphasis added)

Sakamoto’s description above enumerates the sequential steps in a method of manufacture, where the first step relates to FIG. 11A, the next to FIG. 11B and then to FIG. 11C. The step pertaining to FIG. 11B is used to pattern the first electrode (die pad) 14 and the corresponding first backside electrode 16. This **step is followed by the step pertaining to FIG. 11C where the through holes TH are formed by drilling.**

Consequently, Applicants respectfully assert that it is illogical to draw a conclusion, in spite of the illustration of FIG. 11C, that the through holes do not extend through the first electrode (die pad) 14 and the corresponding first backside electrode 16.

Additionally, the Office Action draws yet another conclusion that: “such a pad without hole(s) therein can only be formed or completely formed **after the filling in the through hole inside the substrate is completed,** regardless whether portions of the pads may have been formed prior to the filling; otherwise, the filling inside the substrate would not be able to be completed.” This Office Action conclusion is not supported by Sakamoto, and Applicants have been unable to find in Sakamoto, a description that enables one of ordinary skill in the art to understand how “such a pad without hole(s) therein can only be formed or completely formed after the filling in the through hole inside the substrate is completed,” as asserted in the Office Action.

Consequently, Applicants respectfully assert that Sakamoto does not anticipate Applicants' Claim 1 filling of a through hole nor does Sakamoto anticipate Applicants' sequential method steps of filling the through hole followed by forming the conductive die.

For at least the reasons described above, Applicants respectfully assert that the rejection of Claim 1 under 35 U.S.C. 102(e) is improper and hereby request withdrawal of the rejection followed by allowance of Claim 1.

### **Claims 2, 12 and 19**

Because Claim 1 is allowable, Claims 2, 12 and 19 that each depend directly on Claim 1 are also allowable as a matter of law. *In re Fine*, 837 F.2d 1071 (Fed. Cir. 1988).

Applicants respectfully request withdrawal of the rejection, followed by allowance of Claims 2, 12 and 19.

### **Claim 3**

Claim 3 has been currently canceled thereby rendering moot the rejection of this claim.

## **B. Claim Rejections under 35 U.S.C. §103(a)**

### **Statement of the Rejection**

Claims 4-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sakamoto in view of Kobayashi (US 2003/0040138; of record)

### **Response to the Rejection**

Applicants respectfully request withdrawal of the rejection of claims 4-7 for at least the reason that the rejection does not satisfy the requirements of MPEP § 2143.03, which states in pertinent part: "If an independent claim is nonobvious under 35 U.S.C. 103, then any claim depending therefrom is nonobvious. *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988)."

Specifically, claims 4-7 are nonobvious as each of them depends directly or indirectly on independent claim 1 that has not been rejected under 35 U.S.C. 103(a). Hence, Applicants respectfully assert that claims 4-7 cannot be properly rejected under 35 U.S.C. 103(a), and hereby request withdrawal of the rejection followed by allowance of claims 4-7.

Additionally, the MPEP provides several guidelines for rejecting a claim under 35 U.S.C. 103(a). Specifically, reference is made to MPEP 706.2(j) *Contents of a 35 U.S.C. 103 Rejection*, which states in pertinent part:

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references

themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art and not based on applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991). See MPEP § 2143 - § 2143.03 for decisions pertinent to each of these criteria.  
(Emphasis added)

Comments related to MPEP 706.2(j) are presented below.

#### **Claims 4-7**

Claims 4-7 are directly or indirectly dependent on Claim 1 and therefore all the elements of Claim 1 are included in each of Claims 4-7 via the dependency. The cited prior art references, individually or in combination, do not at least disclose Applicants' method step of "after the filling, forming a conductive die mounting pad and a conductive connecting pad..."

Consequently, Applicants respectfully assert that a rejection of Claims 4-7 under 35 U.S.C. 103(a) would be improper because a *prima facie* case of obviousness cannot be established for at least the reason that the prior art references do not teach or suggest all the limitations of Applicants' Claims 4-7.

Applicants respectfully request withdrawal of the rejection followed by allowance of Claims 4-7.

#### **C. Claim Rejections under 35 U.S.C. §103(a)**

##### **Statement of the Rejection**

Claim 8 has been rejected under 35 U.S.C. 103(a) as being unpatentable over Sakamoto in view of Kobayashi, and further in view of Rapoport (US 5,298,687).

##### **Response to the Rejection**

In light of MPEP § 2143.03 described above, Applicants respectfully assert that dependent claim 8 cannot be properly rejected under 35 U.S.C. 103(a), and hereby request withdrawal of the rejection followed by allowance of claim 8. Additional arguments with reference to MPEP 706.2(j) *Contents of a 35 U.S.C. 103 Rejection* are presented below.

#### **Claim 8**

Claim 8 depends indirectly on Claim 1 and therefore all the elements of Claim 1 are included in Claim 8 via the dependency. The cited prior art references, individually or in combination, do not at least disclose Applicants' method step of "after the filling, forming a conductive die mounting pad and a conductive connecting pad..."

Consequently, Applicants respectfully assert that a rejection of Claim 8 under 35 U.S.C 103(a) would be improper because a *prima facie* case of obviousness cannot be established for at least the reason that the prior art references do not teach or suggest all the limitations of Applicants' Claim 8.

Applicants respectfully request withdrawal of the rejection followed by allowance of Claim 8.

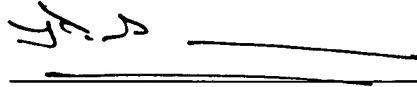
**Prior Art Made of Record**

The prior art made of record has been considered, but is not believed to affect the patentability of the presently pending claims.

### CONCLUSION

In light of the foregoing amendments and for at least the reasons set forth above, Applicant respectfully submits that all objections and/or rejections have been traversed, rendered moot, and/or accommodated, and that at least claims 1, 2, 4-8, 12, and 19-28 are in condition for allowance. Favorable reconsideration and allowance of the present application and all pending claims are hereby courteously requested. If, in the opinion of the Examiner, a telephonic conference would expedite the examination of this matter, the Examiner is invited to call the undersigned representative at (404) 610-5689.

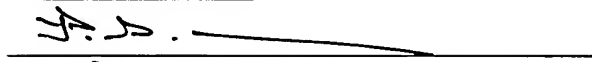
Respectfully submitted,



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I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail, postage prepaid, in an envelope addressed to: Commissioner for Patents, P. O. Box 1450, Alexandria, VA, 22313-1450, on December 29, 2005

  
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